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10/584,925

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Seiji Iwai

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WENDEROTH, LIND & PONACK L.L.P.  
1030 15th Street, N.W.  
Suite 400 East  
Washington, DC 20005-1503

EXAMINER

DIAZ, THOMAS C

ART UNIT

PAPER NUMBER

3656

NOTIFICATION DATE

DELIVERY MODE

05/24/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ddalecki@wenderoth.com  
coa@wenderoth.com

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/584,925 | <b>Applicant(s)</b><br>IWAI ET AL. |  |
|                              | <b>Examiner</b><br>THOMAS DIAZ       | <b>Art Unit</b><br>3656            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 6-8, 10, 16-19 and 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9, 11-15 and 20-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/13/2007, 07/05/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of Species I (Figs. 1-5) which reads on claims 1-5, 9, 11-15, 20-22 in the reply filed on 2/18/2010 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "26" has been used to designate both the marker and the retainer of a lubricant in figure 3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "calculating means", "driving motor" and "a control unit" of claims 13, 14, and 22 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities: The listing of reference marks in the specification is inappropriate for US applications. It is recommended to delete the listing.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 9, 12-14, 21, 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claim 9 recites the limitation "the lubricant". There is insufficient antecedent basis for this limitation in the claim.

Claims 12 and 21 recite "the first positioning member interacts at a position of a mechanical origin of the joint". It is unclear what is meant by the word "interacts". First, there is no mention of what the positioning member is interacting with. Second, the specification gives no specific definition nor disclosure as to what is meant by the word interact. Does it mean contacting or sensing or some other form of interaction? In other words what form of interaction is occurring? It is recommended to reword to use a less ambiguous term or clearly define it in the specification.

Claim element "calculating means" is a means (or step) plus function limitation that invokes 35 U.S.C. 112, sixth paragraph. However, the written description fails to disclose the corresponding structure, material, or acts for the claimed function. There is no mention of what the calculating means and it is unclear what would be an equivalent structure.

Applicant is required to:

(a) Amend the claim so that the claim limitation will no longer be a means (or step) plus function limitation under 35 U.S.C. 112, sixth paragraph; or

(b) Amend the written description of the specification such that it expressly recites what structure, material, or acts perform the claimed function without introducing any new matter (35 U.S.C. 132(a)).

If applicant is of the opinion that the written description of the specification already implicitly or inherently discloses the corresponding structure, material, or acts so that one of ordinary skill in the art would recognize what structure, material, or acts perform the claimed function, applicant is required to clarify the record by either:

(a) Amending the written description of the specification such that it expressly recites the corresponding structure, material, or acts for performing the claimed function and clearly links or associates the structure, material, or acts to the claimed function, without introducing any new matter (35 U.S.C. 132(a)); or

(b) Stating on the record what the corresponding structure, material, or acts, which are implicitly or inherently set forth in the written description of the specification, perform the claimed function. For more information, see 37 CFR 1.75(d) and MPEP §§ 608.01(o) and 2181.

Claims 13 and 22 recite "a calculating means" and claim 14 recites "a control unit" in the form of a 112 6th paragraph recitation. The use of these apparently computer implemented means plus function limitations are unclear since the specification does not disclose a corresponding algorithm associated with the computer. It has been held that a mere reference to a general purpose computer with appropriate

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programming without providing an explanation of the appropriate programming, or simply reciting “software” without providing detail about the means to accomplish the software function, would not be an adequate disclosure of the corresponding structure to satisfy the requirements of 112 2<sup>nd</sup> paragraph. Also, merely referencing a specialized computer or elements that are essentially a black box designed to perform the recited function, will not be sufficient because there must be some explanation of how the computer or the computer component performs the claimed function.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 5, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-239967 in view of Gutknecht (USP 4932313).**

Regarding claim 1, JP '967 discloses an industrial robot having a joint (fig.1), wherein the joint includes a first member (18), and a second member (20) rotatable relatively to the first member, wherein the first member is provided with a first hole (24), and the first member includes: a first positioning member (26) contained in the first hole, [slidable through an inside of the first hole, and projectable from the first hole] (the positioning member is capable of sliding inside the hole via its end 27 and it projects from the hole as seen in fig.3); and a first attaching part (bottom of hole 24 which allows

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for fastening of the positioning member) that fixes the first positioning member at a bottom of the first hole, wherein the second member includes *an interacting means (this limitation is being treated as a 112 6<sup>th</sup> paragraph recitation since interacting is a nonstructural term followed by a functional statement)* interacting with the first positioning member when the first positioning member is projected from the first hole (30).

Regarding the functional recitation(s) in the claim(s) denoted by the “[ ]” the examiner notes while features of an apparatus may be recited either structurally or functionally, claims directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. The reference discloses all the claimed structural limitations and therefore anticipates the claim. See MPEP 2114. Additionally, the apparatus is capable of performing the claimed functions.

JP ‘967 fails to explicitly disclose the first positioning member includes a retainer of a lubricant on a side thereof.

Gutknecht teaches the concept of placing a retainer (38) of a lubricant on a side of a sliding positioning member (31) for the purpose of facilitating the lubrication of the adjacent wall which the member contacts and preventing the member from scraping said wall thereby increasing the durability of the sliding contact.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the positioning member disclosed by JP ‘967 to include a retainer of lubricant as taught by Gutknecht for the purpose of facilitating the



lubrication of the adjacent wall which the member contacts and preventing the member from scraping said wall thereby increasing the durability of the sliding contact.

Regarding claim 5, JP '967 discloses wherein the interacting means is a projection on a side of the second member (see fig.1), and wherein the projection is formed at a position where the projection can contact the first positioning member when the first positioning member is projected (see fig.3).

Regarding claim 12, JP '967 discloses the first positioning member interacts at a position of a mechanical origin of the joint (see fig.3).

**Claims 2, 4, 9, 15, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-239967 in view of Terzian et al. (USP 3648408).**

Regarding claim 2, JP '967 discloses an industrial robot having a joint (fig.1), wherein the joint includes a first member (18), and a second member (20) rotatable relatively to the first member, wherein the first member is provided with a first hole (24), and the first member includes: a first positioning member (26) contained in the first hole, [slidable through an inside of the first hole, and projectable from the first hole] (the positioning member is capable of sliding inside the hole via its end 27 and it projects from the hole as seen in fig.3); and a first attaching part (bottom of hole 24 which allows for fastening of the positioning member) that fixes the first positioning member at a bottom of the first hole, wherein the second member includes *an interacting means (this limitation is being treated as a 112 6<sup>th</sup> paragraph recitation since interacting is a nonstructural term followed by a functional statement)* interacting with the first

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positioning member when the first positioning member is projected from the first hole (30).

Regarding the functional recitation(s) in the claim(s) denoted by the “[ ]” the examiner notes while features of an apparatus may be recited either structurally or functionally, claims directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. The reference discloses all the claimed structural limitations and therefore anticipates the claim. See MPEP 2114. Additionally, the apparatus is capable of performing the claimed functions.

JP '967 does not explicitly disclose wherein the first positioning member includes a first marker on a side thereof, and the first marker specifically indicates a projection length of the first positioning member.

Terzian et al. teaches the concept of using a marker (col.3, lines 39-40) on a positioning member (cam drum) in order to indicate a starting position of the cam drum.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the positioning member disclosed by JP '967 to include a marker as taught by Terzian et al. for the purpose of indicating the starting position of the positioning member or in other words for indicating the position at which it is projected from hole. The use of indicia for indicating positions and lengths is old and well-known and it would be within the level of ordinary skill in the art to make use of them.

Regarding claim 4, JP '967 in view of Terzian et al. fail to explicitly disclose the first marker is a ring-shaped groove. However it would have been an obvious matter of

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design choice to one having ordinary skill in the art at the time of the invention to make use of a ring shaped groove as a marker since different forms of indicia would perform the same function of indicating the position of the position member.

Regarding claim 9, JP'967 in view of Terzian et al. as applied in claim 4, disclose the ring-shaped groove retains the lubricant (the groove would be capable of retaining lubricant).

Regarding claim 15, JP '967 discloses wherein the interacting means is a projection on a side of the second member (see fig.1), and wherein the projection is formed at a position where the projection can contact the first positioning member when the first positioning member is projected (see fig.3).

Regarding claim 21, JP '967 discloses the first positioning member interacts at a position of a mechanical origin of the joint (see fig.3).

**Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-239967 in view of Gutknecht (USP 4932313), as applied to claim 1 above, and further in view of Morawski (DE 29717628 U).**

Regarding claim 11, JP '967 fails to disclose wherein the entire first positioning member is contained in the first hole when the joint performs a regular action, and the first positioning member is projected from the first hole when the joint performs origin adjustment.

Morawski teaches the concept of using a positioning member (14') which is entirely contained in a first hole (see fig.2) when a joint performs a regular action and the positioning member is projected from the first hole when the joint performs origin

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adjustment for the purpose of simplifying the alignment process by avoiding the need to assemble and disassemble the positioning member to the robot arm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the robot arm disclosed by JP'967 to make use of a positioning member as taught by Morawski for the purpose of simplifying the alignment process by avoiding the need to assemble and disassemble the positioning member to the robot arm.

**Claims 13, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-239967 in view of Gutknecht (USP 4932313), as applied to claim 1 above, and further in view of Souji et al. (USP 4980839).**

Regarding claim 13, JP '967 discloses wherein the first positioning member interacts at a position displaced by a given angle from a position of a mechanical origin of the joint (see figures).

JP '967 fails to disclose a calculating means, and wherein the calculating means calculates the position of the mechanical origin using the given displacement angle and the interaction position of the positioning member.

Souji et al. teaches the use of a calculating means (means used to perform process seen in fig.8) wherein the calculating means calculates the position of the mechanical origin using the given displacement angle and the interaction position of the positioning member (6) for the purpose of accurately realigning the robot arm to its origin position after the arm has been displaced without the need of an operator to manually adjust the robot arm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the robot arm disclosed by JP '967 with the calculating means as taught by Souji et al. for the purpose of accurately realigning the robot arm to its origin position after the arm has been displaced without the need of an operator to manually adjust the robot arm.

Regarding claim 14, JP '967 discloses a control unit (see abstract), wherein the joint further includes a driving motor (see fig.2 and 4) for relatively rotating the first member and the second member.

JP '967 fails to explicitly disclose the control unit monitors torque owing to a current of the motor and judges presence or absence of interaction of the first positioning member.

Souji et al. teaches the use of a control unit (means used during process of fig.8) wherein the control unit monitors torque owing to a current of the motor and judges presence or absence of interaction of the first positioning member (the control unit monitors torque by actuating the motor as seen in fig.8 and determines the interaction of the positioning member 6 in order to locate the origin position) for the purpose of accurately and quickly realigning the robot arm to its origin position after the arm has been displaced without the need of an operator to manually adjust the robot arm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the robot arm disclosed by JP '967 with the control unit as taught by Souji et al. for the purpose of accurately and quickly realigning

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the robot arm to its origin position after the arm has been displaced without the need of an operator to manually adjust the robot arm.

**Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-239967 in view of Terzian et al. (USP 3648408), as applied to claim 2 above, and further in view of Gutknecht (USP 4932313).**

Regarding claim 3, JP '967 fails to explicitly disclose the first positioning member includes a retainer of a lubricant on a side thereof.

Gutknecht teaches the concept of placing a retainer (38) of a lubricant on a side of a sliding positioning member (31) for the purpose of facilitating the lubrication of the adjacent wall which the member contacts and preventing the member from scraping said wall thereby increasing the durability of the sliding contact.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the positioning member disclosed by JP '967 to include a retainer of lubricant as taught by Gutknecht for the purpose of facilitating the lubrication of the adjacent wall which the member contacts and preventing the member from scraping said wall thereby increasing the durability of the sliding contact.

**Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-239967 in view of Terzian et al. (USP 3648408), as applied to claim 2 above, and further in view of Morawski (DE 29717628 U).**

Regarding claim 20, JP '967 fails to disclose wherein the entire first positioning member is contained in the first hole when the joint performs a regular action, and the

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first positioning member is projected from the first hole when the joint performs origin adjustment.

Morawski teaches the concept of using a positioning member (14') which is entirely contained in a first hole (see fig.2) when a joint performs a regular action and the positioning member is projected from the first hole when the joint performs origin adjustment for the purpose of simplifying the alignment process by avoiding the need to assemble and disassemble the positioning member to the robot arm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the robot arm disclosed by JP'967 to make use of a positioning member as taught by Morawski for the purpose of simplifying the alignment process by avoiding the need to assemble and disassemble the positioning member to the robot arm.

**Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-239967 in view of Terzian et al. (USP 3648408), as applied to claim 2 above, and further in view of Souji et al. (USP 4980839).**

Regarding claim 22, JP '967 discloses wherein the first positioning member interacts at a position displaced by a given angle from a position of a mechanical origin of the joint (see figures).

JP '967 fails to disclose a calculating means, and wherein the calculating means calculates the position of the mechanical origin using the given displacement angle and the interaction position of the positioning member.

Souji et al. teaches the use of a calculating means (means used to perform process seen in fig.8) wherein the calculating means calculates the position of the mechanical origin using the given displacement angle and the interaction position of the positioning member (6) for the purpose of accurately realigning the robot arm to its origin position after the arm has been displaced without the need of an operator to manually adjust the robot arm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the robot arm disclosed by JP '967 with the calculating means as taught by Souji et al. for the purpose of accurately realigning the robot arm to its origin position after the arm has been displaced without the need of an operator to manually adjust the robot arm.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art contains similar robot arms which include similar methods of origin adjustment.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS DIAZ whose telephone number is (571)270-5461. The examiner can normally be reached on Monday-Friday 7:30am to 4:00pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas Diaz/  
Examiner, Art Unit 3656

/RICHARD WL RIDLEY/  
Supervisory Patent Examiner, Art Unit 3656